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Conservation efforts of sea turtles in India: Socio-economics and the need for a comprehensive action plan

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ABSTRACT

Among the five species of sea turtles (olive ridley, green, hawksbill, leatherback and loggerhead), all species other than loggerhead nest along the Indian coast. India has many unique sea turtle populations. Olive ridleys are more abundant and unique for mass nesting along the Orissa coast. In recent years, the turtles migrating to Indian waters are on the decline. The increased human alteration of nesting beaches, erosion and incidental catch have contributed to their decline. Turtles are hunted mainly for the meat and their eggs are poached. The illegal trade for turtle meat in some places like Gulf of Mannar area is still posing a big problem for the conservationists. The recent stranding of many turtles belonging to three species due to injury/suffocation along the northern coast of Gulf of Mannar is yet another example of the plight of the turtles due to incidental catch. High mortality of olive ridleys owing to incidental catch has become a regular annual phenomenon along the Orissa coast. This is greater along the east coast, possibly due to the large scale migration of olive ridleys to the Orissa coast for mass nesting. The government departments and NGOs have taken efforts to implement the incorporation of TEDs in the trawl nets. However, the increased fishing fleet and the subsequent unpredictability in catch have made the fisher folk reluctant to use TEDs as they think they might lose a fraction of their catch due to its use. So, the need of the hour is not only the stringent enforcement of laws, but also a comprehensive action plan to alleviate the fears in the mind of fisher folk and to encourage and involve them in conservation efforts.

KEYWORDS: sea turtles, TED, socio-economics, conservation

INTRODUCTION

India, being the second largest country in Asia, has a coastline of about 7,516 kms with rich and diverse fauna and flora. Sea turtles are one among the unique fauna groups in marine biodiversity as five species of sea turtles, Olive ridley (*Lepidochelys olivacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) occur along the Indian coast. While olive ridley, green, hawksbill and leatherback turtles nest along the Indian coast, loggerhead, although reported along the Indian coast, has not been found to nest. The coast of the Orissa state is well known for annual mass nesting or 'arribadas' of olive ridleys and the beaches of Gahirmatha, Devi river mouth and Rushikulya are the unique locations of mass nesting. Tamil Nadu and Andhra Pradesh coasts are considered as the migratory pathways of olive ridleys for approaching mass nesting beaches in Orissa (Tripathy and Choudhury, 2001).

Increased fishing activity along the nesting beaches, incidental catch, beach developmental activities etc. have had detrimental effects on sea turtles resulting in a declining trend of sea turtles

migrating to Indian waters. The incidental catches rank foremost among them. The incidental catch is more along Tamil Nadu coast next to Gahirmatha coast in Orissa and the gill nets account for the major killings (Rajagopalan et al., 2002).

THREATS TO SEA TURTLES

Along the east coast of India, West Bengal State has three species of turtles (olive ridley, hawksbill and green) and illegal turtle meat trade has been reported in Raidighi, Kakdip and Namkhana in Sundarban area and in Gharichak, Thakurchak, Botipur and Ramnagar in Digha-Sankarpur area (Roychowdhury, 2001). Along the coast of Orissa State, four species of sea turtles, (olive ridley, hawksbill, green and leatherback) have been reported. Gahirmatha is the largest rookery in the world and is a part of Bhitarkanika Wildlife Sanctuary. Normally over 100,000 nesting turtles have been reported every year which sometimes rises to 600,000 nesting turtles (Karthik Ram, 2000). The incidental catch due to trawl and gill netting, habitat degradation due to casurina plantation and artificial illumination at Rushikulya and Gahirmatha coasts are the detrimental factors (Kar, 2001).

The super cyclone in October 1999 has also left much impact on the Orissa coast (Kar, 2001). Along the Andhra Pradesh State coast, four turtle species occur and threats include egg collection by the fishermen community near Kapaskudi and Pudimadaka areas, killing for meat, incidental catch, aquaculture and non-human predation. All five species occur along the Tamil Nadu State coast. Live turtle trade existed on this coast in 1960s with Sri Lanka. It was estimated that about 3000 to 4000 turtles landed annually between Rameswaram and Mimisal. The green turtle constituted three fourths of the catch (Rajagobalan, 1984). Death or injury due to turtle meat poisoning has also been reported along Tuticorin coast (Silas and Bastian Fernando, 1984). Illegal turtle meat trade is common along the Tuticorin coast. But, in Nagapattinam area, mid-Tamil Nadu coast, the fishermen don't have the habit of consuming turtle meat and chop off the head and flippers of the turtles entangled in the net. Egg poaching is common along this coast.

Along the west coast of India, in Gujarat coast, except for loggerhead all the other four species have been reported. Egg predation by animals and local people and incidental catch in fishing gears like trawl and gill nets are the major threats to turtles along this coast. In Maharashtra and Goa coast, the olive ridley is common. Incidental catch in trawl nets and egg poaching by humans are the main threats.

Nesting by Green, Olive ridley and Hawksbill turtles have been reported in the Lakshadweep Islands. Hunting of the hawksbill for the shell and that of green and olive ridley for fat are the main threatening factors. Four species of sea turtles, (leatherback, hawksbill, green and olive ridley) occur along the Andaman and Nicobar archipelago, which consists of more than 300 islands with a coastline of about 1,962 kms. The threats to sea turtles include poaching by feral dogs and humans, sand mining, incidental catch, habitat degradation and tourism. Turtles have formed an important food source for the original inhabitants of Andaman and Nicobar Islands. The original inhabitants of the islands carried out subsistence hunting at offshore or by capturing nesting turtles on beaches. They also collect turtle eggs, which formed a valuable protein source. In Andaman Islands, all the species except the leatherback were hunted for meat. In Nicobar, cooked turtle meat is consumed regularly. Sometimes, it is taken raw minced and mixed with coconut. The green and hawksbill turtles are the species usually eaten. The original inhabitants of the Islands are exempted from the Indian Wildlife (Protection) Act, 1972.

CONSERVATION EFFORTS

All the five species of sea turtles are listed under Schedule I of the Indian Wildlife (Protection) Act 1972 and India is a signatory to the Convention of

International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In Goa, the local people and the wildlife department jointly manage the turtle nesting beach in Morjim. Querium and Palolem are the other two places of nesting. In Andaman and Nicobar Islands, 94 islands in the Andamans have been notified as sanctuaries which include 30 islands as confirmed sea turtle nesting sites (Bhaskar, 1993). Along Orissa coast, thousands of turtles die each year due to incidental catch, entanglement in nets and injury from propellers. The fisher folk are reluctant to use turtle excluder device (TED) due to concern that substantial quantity of fish catch would also be lost. Though such loss may be 5% or less, the unpredictable catch and increased fishing activity has resulted in reluctance among the fisher community to use TED.

The efforts made by government agencies and non-governmental organizations to safeguard the turtles were in vain. So, in order to safe guard the turtles during the mass nesting season, the Orissa government, in accordance with Sections 2, 7 and 4 of Orissa Marine Fishing Regulation Act (OMFRA), 1982 and provisions of Wildlife Protection Act, 1972, has clamped a six-month ban on fishing activity along the 20 km stretch Dhamra-Barunei mouth within Gahirmatha marine sanctuary, prohibiting fishing activity within a seaward radius of 20 km from the sanctuary. Such hard measures are often necessary to protect the endangered species. But, this blanket ban has made the livelihood of the poor traditional fishermen miserable. So, the socio-economic aspect has to be looked into while enforcing the protection acts. The other way is to educate and convince the fisher community in the area to adopt alternate livelihood options during the turtle nesting season and to allow the traditional fisher folk to fish with non-mechanised crafts and non-lethal gears. Ecotourism is another option for these traditional fisher folk during this nesting season. The mechanized trawl boats operators should be convinced to use TEDs in their nets. Though the navy has a strong influence on the coastal waters, their access to shallow waters is restricted. The cooperation of the local fisher populace is necessary to have effective conservation measures.

The lack of coordination among the government agencies is another factor which needs immediate attention. The planting of casuarina along the mass nesting beaches in Orissa coast by the social forestry division as a measure to mitigate the effect of cyclone, has deprived the turtles of much of the very prime nesting ground. These casuarina plants along the mass nesting beaches need to be removed immediately. The socio-economic aspect of the poor coastal fisher community makes the enforcement a difficult task. So, the ultimate sufferer is the turtles. This could be tackled not only by enforcement, but

also with a comprehensive action plan to educate the coastal fisher folk on the need to preserve this valuable species for their posterity. The ecological role played by these turtles needs to be explained to these people. Alternatively, these fisher folk can engage in non-mechanised artisanal fishing to sustain their livelihood. The stakeholders need to be involved in the conservation measures.

The incidental catch is also more along the Tamil Nadu state coast. The turtles are illegally hunted for meat in Gulf of Mannar area, with myths floating around that the meat and blood has some curative effect. Though the area is protected under the biosphere reserve, a comprehensive action plan is necessary to educate the coastal people to explain the facts and to get them involved in conservation plans.

The resources of the Andaman and Nicobar Islands are protected under various acts including Wildlife Protection Act 1972, Convention on International Trade in Endangered Species of wild flora and fauna (CITES), Environment (Protection) Act, 1986, The Coastal Regulation Zone Notification 1991 (Notification No.S.O.114(E) of 19 February 1991) and The Fisheries Act of A&N Islands. But, the government is obliged to look into the needs of the native island people and relax regulations for them. So, it is considered very necessary to educate the coastal fisher folk and involve them in all conservation measures wholeheartedly.

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